

BIAN, YONG

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EDUCATION

University of Missouri, Columbia, USA

Aug 2015 - May 2021

Ph.D. in Economics GPA:3.72

Dissertation: Essays on Machine Learning Applications in Economics: Causal Inference and Prediction

Honors/Awards: Summer Research Grant (2018&2019)

The Chinese University of Hong Kong, Hong Kong SAR

Aug 2013 - Dec 2014

M.S. in Economics

Honors/Awards: Excellent Performance Award (Ranked No.1 in Applied Econometrics class); Dean's List(For outstanding graduate students)

Central University of Finance and Economics, Beijing, China

Sep 2009 - Jun 2013

B.S. in Statistics

Honors/Awards: National Research/Survey Analyst (National Certificate); Summer Volunteer (2011) in Yu Huan, Zhejiang Province

WORKING PAPERS

A Model Discussion and DML Application-Based on California Math Curriculum Causal Effect Analysis (submitted)

- When applying machine learning techniques with high dimensional data in causal effect estimations, the regularization bias causes its estimator not consistent in square root rate. Double/Debiased Machine Learning (DML) successfully obtains a properly converged estimator. In this paper, I clearly explain what is DML to a broader audience group and use it to a causal effect application. Moreover, I take a bootstrap procedure to improve the DML standard error reporting system. As an extension to the existing studies on how curriculum materials affect student achievement, my work focuses on the effect of California Math, an elementary math textbook, on student achievement and compare the model results of DML, Kernel Matching and Ordinary Least Square (OLS). In my study, the DML estimators avoid the possible misspecification bias from linear models and obtain statistical significant estimators which beat the Kernel Matching results.

Will Young Economics Professors' Salaries be Affected by the Background? (submitted)

- In this paper, we analyze the effects of gender, PhD graduation school rank, and undergraduate major on young economics professors' salaries. The dataset used is novel, containing detailed and time varying research productivity measures and other demographic information of young economics professors from top 50 public research universities in the United States. We apply double/debiased machine learning (DML) method to the estimation problem and obtain consistent estimators under high-dimensional control variable set. By tracking the first 10 years of their professional work experience, we find that there barely exist effects on young faculties' salaries from the above three factors in most of the experience years. However, the gender effect on salary of experience year 7 is both statistically significant and economically significant (large enough in magnitude to have a practical meaning). In experience years 5 to 7 which are also near most faculties' promotion years, the gender effects are obvious. For both PhD graduation school rank and undergraduate major, the estimates for experience years 7 to 9 are large in magnitude; however they do not possess statistical significance. Overall, the effects tend to expand with years of experience. Next, based on what have been found, we discuss possible economic mechanisms and reasons.

Paper Quality and Gender Bias Based on Text Analysis (submitted)

- In this paper, we build machine learning and simple linear models in predicting paper outcomes and discuss the gender bias associated with it. A novel set which contains paper text content and its associated H-index, gender and other information, collecting from recent years published journals is used. We apply tf-idf vectorization and other NLP tools to transfer text content into numeric features as model inputs; and take H-index as model outcome variable. We give adequate descriptive analysis on paper H-index by

gender and discuss the possibilities of gender causal effect. We find when using paper text features to predict H-index, the prediction power is about 60% of classification and about 44 root mean square error of regression. Moreover, when controlling for paper text the gender causal effect hardly exist. As long as the paper contains similar text, gender would not cause its H-index change. Besides, we give real world meanings associate with the models.

WORK EXPERIENCES

International Business School, Zhejiang Gongshang University

Assistant Professor

Aug 2021-present

- Teaching: Time Series, International Finance

Department of Economics, University of Missouri

Research Assistant

Jun 2017 - Aug 2017

- Project: "Modeling and Extrapolating Wheat Producer Support Using Income and Other Factors."
- Coded in R for data cleaning ("dplyr", etc);
- Penal data analysis, built fixed effect models;
- Made statistic tables and graphs ("ggplot", etc).

Teaching Assistant

Aug 2015 - Present

- Teach tutorials classes and exam reviews: usually a group of 20 people;
- Hold office hours, answering students course related questions;
- Organize exams and grading;
- Three semesters of **Head TA**: as a class organizer, helped the professor with administrative tasks, bridge between professor and students.
- TA courses: Econ1015: Principle of Macroeconomics; Econ1014: Principle of Microeconomics; Econ 3229: Money, Banking and Financial Markets; Econ 4353: Intermediate Macroeconomics; Econ 4371/7371: Introductory Econometrics; Econ 4370/8370: Quantitative Economics; Econ4351/7351 Intermediate Microeconomics

Beijing Haidian Dist. Ministry of Statistics, Beijing, China

Summer Intern, Data Analyst

Jun 2013 - Aug 2013

- Cleaned survey data, built linear regression models and statistic tables;
- Helped completing 50 pages salary report;
- Assisted managers in other administrative tasks.

CONFERENCE PRESENTATIONS

Missouri Valley Economic Association 56th Annual Conference

Oct 2019

A Double/Debiased Machine Learning Application in California Math Curriculum Treatment Effect Analysis

The 5th Frontiers of Environmental Technology and Economy

Nov 2021

Health Impacts of Cooking Fuel Choice on the Elderly: An Application of Double Machine Learning in Causal Inference (in Chinese)

The 13th International Symposium on Human Capital and Labor Markets

Dec 2021

Will Young Economics Professors' Salaries be affected by the background?

SOFTWARE AND OTHER INTERESTS

- **R**(everyday use), **Python**(NLTK, spaCy, sklearn, Numpy, Keras, Tensorflow, etc.), **SQL**(window functions, joins, etc.), **AWS**
- Kaggle competition:
House Prices: Advanced Regression Techniques
Quora Insincere Questions Classification
- Certified Coursera classes (Focus: Deep learning) and Udemy classes(Focus: NLP)

REFERENCES

David M. Kaplan (Advisor)

Associate Professor, Department of Economics, University of Missouri
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Peter Mueser (Committee member)

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Saku Aura (Committee member)

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X. H. Wang (Teaching Assistant Supervisor)

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